

ABSTRACT

A system for determining the location of an object includes an interrogator remote from the object and a transponder located at the object. The interrogator receives GPS signals and transmits pre-positioning data and a tracking signal to the transponder. The pre-positioning data includes pseudorandom noise (PRN) code number, Doppler frequency offset and code phase offset while the tracking signal includes reference time and frequency information. The transponder collects RF samples of at least one of the GPS signals associated with one of the PRN code numbers and correlates the RF samples of the GPS signal against code replicas of the GPS signal based on the Doppler frequency offset, code phase offset and reference time and frequency information for that GPS signal to produce the correlation snapshot. The transponder transmits the correlation snapshot to the interrogator and the interrogator determines the pseudorange associated with the GPS signal using the correlation snapshot.